

## CLAIMS:

1. A radiation sensor (10) of an integrated type which is provided with at least one light-sensitive and/or X-ray-sensitive sensor element (11) whose output signal indicates the amount of radiation absorbed by the sensor element, and with at least one temperature sensor (12, 12a, 12b) whose output signal indicates the temperature prevailing at the temperature sensor.

2. A radiation sensor of an integrated type, notably as claimed in claim 1, which sensor is provided with at least one light-sensitive and/or X-ray-sensitive sensor element (11) whose output signal indicates the amount of radiation absorbed by the sensor element, and also with at least one further sensor element (12) which is sensitive to a physical quantity other than that whereto the light-sensitive and/or X-ray-sensitive sensor element (11) is sensitive, all sensor elements (11, 12) delivering similar output signals and being connectable to an evaluation unit (13) as similar components.

3. A radiation sensor as claimed in claim 1 or 2, characterized in that the light-sensitive and/or X-ray-sensitive sensor elements are arranged in the form of a matrix on the radiation sensor.

4. A radiation sensor as claimed in at least one of the claims 1 to 3, characterized in that it is provided with a temperature sensor (12a, 12b) which includes a current mirror with two paths ( $T_3$ - $T_5$ ,  $T_4$ - $T_6$ ), a respective bipolar transistor ( $T_1$ ,  $T_2$ ) being provided in each of the two paths, the base of said bipolar transistor being short-circuited to the collector, the surface areas of said bipolar transistors being different and the current (I) in the current paths being approximately proportional to the temperature of the bipolar transistors.

5. A radiation sensor as claimed in claim 4, characterized in that the current (I) in the current paths is coupled out as an output current ( $I_{out}$ ) via a further current mirror ( $T_7$ ).

6. A radiation detector as claimed in claim 4 or 5, characterized in that the difference between the emitter-base voltages of the bipolar transistors ( $T_1$ ,  $T_2$ ) is determined by a coupling out circuit (A) so as to be delivered as an output voltage ( $V_{out}$ ).

5 7. A radiation detector, notably an X-ray detector for a computed tomography apparatus, which detector is provided with at least one radiation sensor (10) as claimed in at least one of the claims 1 to 6, as well as with an associated evaluation unit (13) for reading out and evaluating the output signals delivered by the radiation sensor.

10 8. A radiation detector as claimed in claim 7, characterized in that the radiation sensor (10) is provided with a temperature sensor (12, 12a, 12b) and that the evaluation unit (13) is arranged in such a manner that it corrects the output signals of the light-sensitive and/or X-ray sensitive sensor elements (11) of the radiation sensor by means of the temperature value measured by the temperature sensor.

15 9. A radiation detector as claimed in claim 7 or 8, characterized in that the radiation sensor (10) is provided with a temperature sensor (12, 12a, 12b), and that the evaluation unit (13) is arranged in such a manner that it is capable of making a diagnosis concerning faults and/or ageing of the radiation sensor (10) on the basis of the temperature  
20 value measured by the temperature sensor.

10. An X-ray examination apparatus which is provided with a radiation detector, notably an X-ray detector, which includes at least one radiation sensor (10) as claimed in at least one of the claims 1 to 6, as well as an associated evaluation unit (13) for reading out and  
25 evaluating the output signals delivered by the radiation sensor.

10001895.022102